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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/970,259	10/04/2001	Haruo Koharagi	N9450.0033/P033	1593

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EXAMINER

NGUYEN, HANH N

ART UNIT	PAPER NUMBER
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2834

DATE MAILED: 11/14/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/970,259

Applicant(s)

KOHARAGI ET AL.

Examiner

Nguyen N Hanh

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 August 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 4, 6 and 7 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5 and 8-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 October 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Remarks***

1. In view of amendment and Applicant's argument, the Examiner withdraws the objections to the drawings, the specification and the rejections under Section 112, first paragraph to previous claim 8 and rejections under Section 112, second paragraph to previous claims 1-15. However, Applicant's amendment necessitated new ground of 112 rejection to claims 1-3,5,8-15. The cancellation of claims 4,6,7 has been acknowledged.

### ***Response to Arguments***

2. Applicant's arguments with respect to claims 1-3,5,8-15 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-3,5,8-15 are rejected under 35 U.S.C. 112, second paragraph to as failing to point out and distinctly claiming the subject matter which the applicant regards as his invention. Claims 1-3 refer to "magnet insertion holes having substantially V shape". The term "substantially" is often used in conjuncture with another term to describe a particular characteristic of the claimed invention. It is a broad term. In re Nehrenberg, 280 F 2d 161, 126 USPQ 383 (CCPA 1960)

Claims 5,8-15 are dependent claims.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3,5,8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takezawa et al. in view of Kenji et al. and further in view of Asano et al.

Regarding claim 1, Takezawa et al. show a permanent magnet rotating electrical machine comprising; a rotor core split into multiple parts in an axial direction and containing permanent magnets built in multiple permanent magnet insertion holes (inherent in Fig. 9), wherein said rotor core is arranged so that the gap length of the magnetic path on the q-axis side is greater than that on the d-axis side (because of concave portion 32-35 provided between the poles in the vicinity of the outer surface of the core as shown in shown in fig. 9 and 13). The permanent magnet motor disclosed by Takezawa et al. fails to show a second rotor core for producing reluctance torque and does not show clearly a stator provided with concentrated winding armature wiring in multiple teeth on a stator core.

However, Kenji et al. disclose the permanent magnet motor wherein the rotor core (13) with embedded permanent magnets is intergraded with the second core (16) without embedded magnets to generate only reluctance torque for the purpose to attain high efficiency motor by increasing reluctance torque (Abstract).

Moreover, Asano et al. disclose the permanent magnet motor wherein a stator provided concentrated winding armature wiring in multiple teeth on a stator core (abstract and Fig. 1) for the purpose of inducing magnetic flux.

Since Takezawa et al. and Kenji et al. and Asano et al. are in the same field of endeavor, the purpose disclosed by Kenji et al. and Asano et al. would have been recognized in the pertinent art of Takezawa et al.

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to modify Takezawa by adding a second rotor without embedded magnets for producing only reluctance torque and a stator provided concentrated winding armature wiring in multiple teeth on a stator core as taught by Kenji et al and Asano et al. for the purpose of attaining high efficiency motor.

Regarding claim 2, Kenji et al. also show a second rotor core includes a flux barrier (14 in Fig. 3) having almost the same form (oval slot shape) as that of said permanent magnet insertion hole is formed on said second rotor core (11 in fig. 4) in the cross section in the radial direction for the purpose to generate large reluctance torque and increase motor efficiency.

Since Takezawa et al. and Kenji et al. and Asano et al. are in the same field of endeavor, the purpose disclosed by Kenji et al. and Asano et al. would have been recognized in the pertinent art of Takezawa et al.

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to modify Takezawa by adding a second rotor with a flux barrier having almost the same form as that of said permanent magnet insertion

hole is formed on said second rotor core in a cross section a the radial direction and a stator provided concentrated winding armature wiring in multiple teeth on a stator core as taught by Kenji et al. and Asano et al. for the purpose to generate large reluctance torque and increase motor efficiency.

Regarding claim 3, Kenji et al. also show the rotor wherein an almost true round peripheral shape are formed on said second rotor core in the cross section in the radial direction.

Regarding claim 5, Kenji et al. also show the rotor wherein a width of said permanent magnet insertion hole on said first rotor core is greater than that of said flux barrier provided on said second rotor core as can be seen clearly in drawing 4.

Regarding claim 8, Kenji et al also show an arrangement of said permanent magnet insertion hole provided on said first rotor core (19a and 19b of Fig.5) is different from that of a flux barrier (21 of Fig. 6) provided on said second rotor core (Page. 4, lines 14-39)

Regarding claim 9, Kenji et al. also show a permanent magnet rotating electrical machine wherein the number of said flux barriers provided on said second rotor core (12 in Fig. 6) is greater than that of said permanent magnet insertion holes provided on said first rotor core (8 in Fig. 5).

Regarding claims 10, Kenji et al. also show a permanent magnet rotating electrical machine wherein said permanent magnet insertion holes provided on said first rotor core and said flux barriers provided on said second rotor core are formed in a straight line or a shape like a letter U or V (Fig. 5,6).

Regarding claim 11, Kenji et al. also show a permanent magnet rotating electrical machine wherein said permanent magnet insertion holes provided on said first rotor core and said flux barriers provided on said second rotor core are formed with a shape like a letter U or V (Fig. 5,6).

5. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takezawa et al. in view of Kenji et al. and Asano et al. and further in view of Fukuda.

Regarding claim 12 Takezawa et al., Kenji et al. and Asano et al. show all the limitations of the claimed invention except showing a permanent magnet rotating electrical machine wherein non-magnetic substances are inserted in the flux barriers provided on said second rotor core.

However, Fukuda shows a permanent magnet rotating electrical machine wherein non-magnetic substances (caulking pin 6 in Col. 1 lines 25-30) are inserted in said flux barriers (14 in Fig. 7) for the purpose of carrying the balance weight.

Since Takezawa et al., Kenji et al., Asano et al. and Fukuda are in the same field of endeavor, the purpose disclosed by Fukuda would have been recognized in the pertinent art of Takezawa et al., Kenji et al. and Asano et al.

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to form a permanent magnet type rotating electrical machine wherein non-magnetic substances are inserted in the flux barriers provided on said second rotor core as taught by Fukuda for the purpose to carry the balance weight.

6. Claims 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takezawa et al. in view of Kenji et al. and Asano et al., Fukuda and further in view of Moreira.

Regarding claim 13 Takezawa et al., Kenji et al. Asano et al. and Fukuda show all the limitations of the claimed invention except showing a permanent magnet rotating electrical machine driven by a 180-degree current-applied sinusoidal wave inverter without magnetic pole position sensor.

However, the permanent magnet motor disclosed by Moreira shows a 180-degree current-applied sinusoidal wave inverter (Fig. 4 and Col. 9, lines 30-31) for the purpose to control the operation of a permanent magnet motor (Abstract).

Since Takezawa et al., Kenji et al, Asano et al. Fukuda and Moreira are in the same field of endeavor, the purpose disclosed by Moreira would have been recognized in the pertinent art of Takezawa et al., Kenji et al., Asano et al. and Fukuda.

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to use a 180-degree current-applied sinusoidal wave inverter for the purpose to control the operation of a permanent magnet motor as taught by Moreira for the purpose to control the operation of a permanent magnet motor.

Regarding claim 14 and 15, Fukuda also shows the compressor of an air conditioner to be driven by said permanent magnet motor.

### ***Conclusion***

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP



§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

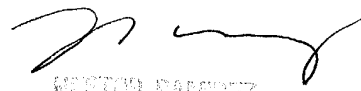
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

***Information on How to Contact USPTO***

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hanh N Nguyen whose telephone number is (703)305-3466. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (703)308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703)305-3431 for regular communications and (703)305-3431 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-1782.

  
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